INTERNATIONAL AND CULTURAL PSYCHOLOGY
Series Editor: Anthony J. Marsella

Trauma Interventions in War and Peace

Prevention, Practice, and Policy

Edited by

Bonnie L. Green,
Matthew J. Friedman,
Joop T.V.M. de Jong,
Susan D. Solomon,
Terence M. Keane,
John A. Fairbank,
Brigid Donelan,
and
Ellen Frey-Wouters

Trauma Interventions in War and Peace

Prevention, Practice, and Policy

Edited by

Bonnie L. Green
Georgetown University Medical Center, Washington, D.C.

Matthew J. Friedman
National Center for PTSD, White River Junction, Vermont and Dartmouth Medical School, Hanover, New Hampshire

Joop T.V.M. de Jong
Transcultural Psychosocial Organisation, Amsterdam, The Netherlands

Susan D. Solomon
National Institutes of Health, Bethesda, Maryland

Terence M. Keane
National Center for PTSD, Boston, Massachusetts and Boston University, Boston, Massachusetts

John A. Fairbank
UCLA–Duke University National Center for Child Traumatic Stress, Durham, North Carolina

Brigid Donelan
United Nations, New York, New York

Ellen Frey-Wouters
International Policy Research Institute, Riverdale, New York

With *Special Consultant* Yael Danieli
Senior Representative to the United Nations, ISTSS

Kluwer Academic / Plenum Publishers
New York, Boston, Dordrecht, London, Moscow

Chapter 13

Natural and Technological Disasters

Daya Somasundaram, Fran H. Norris, Nozomu Asukai, and R. Srinivasa Murthy

Disasters are very common. Worldwide, earthquakes, floods, cyclones, landslides, technological accidents, and urban fires occur daily. They tend to occur suddenly, without much warning, and cause massive destruction, sometimes killing or injuring large numbers of people within a short time. In 1999 alone, natural disasters killed over 60,000 people in Turkey, 10,000 people in India, and 25,000 people in Venezuela (United Nations General Assembly Economic and Social Council [UNGAESC], 2000). Disasters disproportionately strike the poor, socially deprived, and marginalized, and their consequences may be more serious and long-lasting in these groups. Similarly, disasters affect developing nations more adversely than developed nations. However, these groups and nations may have the fewest resources or facilities to cope with the aftermath of disasters.

It is now recognized that disaster survivors will need food, shelter, and other relief measures, as well as long-term rehabilitation facilities. It is also generally acknowledged that financial aid is needed for the survivors to recover. Year after year, international relief agencies and nongovernmental organizations (NGOs) find themselves stretched to the limit to meet these basic needs of disaster-stricken populations (UNGAESC, 2000). Yet food, shelter, and material goods constitute only the "tip of the iceberg" with regard to disaster victims' needs. Disaster-stricken communities often experience disruption of family and community life, work, normal networks, institutions, and structures. Loss of motivation, dependence on relief, hostility, and despair can sometimes develop in members of the community

exposed to disasters. As much as we work to provide emergency relief and look after survivors' basic needs, their right of access to health care has to be recognized, including care for mental health as well as physical health. Mental health problems will cause difficulties in normal functioning, working capacity, relationships, and family life. As the report from UNGAESC (2000, p. 14–15) points out, "A major challenge for humanitarian agencies is to understand that the mental health consequences of emergencies can cause a level of distress that may hamper recovery as well as rehabilitation and to incorporate culturally appropriate psychosocial assistance programmes in relief efforts, in cases of both war and natural disasters. Member States may wish to encourage increased international attention to this issue." This is precisely the purpose of this chapter, as well as this volume as a whole.

Broadly, this chapter is divided into four parts. We begin with a general discussion of the epidemiology, definitions, and characteristics of disasters (Nature and Scope). Then we describe how disasters unfold in time and highlight the personal characteristics and social dynamics that appear to be most important in understanding the recovery process (Effects). In the third section, we review methods of providing assistance to disaster victims (Interventions), and then we conclude by describing actions that policymakers, communities, families, and individuals can take to foster post-disaster mental health (Recommendations).

NATURE AND SCOPE OF DISASTERS

Epidemiology

On average, natural and technological disasters kill 50,000 people each year. An additional 74,000 are seriously injured, 5 million are displaced from their homes, and over 80 million are affected in some way. We have adjusted the statistics presented in the *World Disaster Report* (International Federation of Red Cross and Red Crescent Societies, 1999) to include only the effects of earthquakes, floods, high winds, landslides, technological accidents, and urban fires. Thus these statistics do *not* include the effects of drought or famine or war. No area of the world is immune from these events. Averaging 197 disasters per year, Asia leads the rest of the world, followed by the Americas at 111 disasters, Europe at 77, Africa at 61, and Oceania at 18. Although some developed countries, such as the United States, are quite vulnerable to disasters, developing countries are disproportionately exposed. De Girolamo and McFarlane (1996) estimated that the ratio of disaster victims in developing countries to disaster victims in

developed countries is 166:1. Fatalities average 13:1 (International Federation of Red Cross and Red Crescent Societies, 2002). There is every reason to believe that this imbalance will only get worse in the foreseeable future. Increasing industrialization, urbanization, decaying infrastructures, and deforestation are among the factors that place many of the world's countries at increased or increasing risk (Quarantelli, 1994).

The involvement of an individual and community in a given disaster will depend on where they are in reference to the site of maximum impact. At the epicenter, where the disaster strikes, many may die or be severely injured or maimed. A little farther out, survivors may have felt the full impact and experienced the terror but not suffered major injury. More peripherally, witnesses may have seen the disaster, experienced fear, and taken shelter, while most will have heard of the event only second-hand or through the media. Nonetheless, some in the community may have relatives or friends who are dead or injured, or they may take part in rescue and relief efforts. All these grades of exposure or involvement may give rise to a variety of psychological responses. Although people who have directly experienced losses, threat to life, and injury will be most strongly affected psychologically, lesser effects may extend to the community at large.

Definitions

Almost all definitions of disasters emphasize their collective nature. In contrast to many other potentially traumatic events, such as criminal victimization or life-threatening accidents, disasters create stress for many people simultaneously. Noting that previous definitions variously emphasized the agents themselves (e.g., hurricane, earthquake), the physical impact of such agents (e.g., quantified damages), the social impact (e.g., losses and social disruption), socially constructed perceptions of crisis, and political phenomena (e.g., declarations), Quarantelli (1985) defined disaster as a **"consensus-type crisis occasion where demands exceed capabilities." This definition of disaster as "an imbalance in the demand-capability ratio"** is particularly useful because it reminds us that the consequences of disasters follow not only from the needs of disaster-stricken populations but also from the ability of communities to meet those needs. Thus, to understand disasters, we must evaluate the capabilities and resources of stricken individuals and communities, just as we evaluate the objective characteristics and impact of physical agents. And, to lessen the severity of disasters, we must bolster resources, just as we attempt to prevent or mitigate the actual physical impact of agents such as floods, high winds, and earthquakes. Moreover, if we understand that

the "capabilities" side of the disaster equation includes psychological and social resources as well as material resources, we also understand that intervention efforts directed solely at replacing the latter will undoubtedly fail.

Characteristics

Current schemes (e.g., Bolin, 1985; Green, 1982; Quarantelli, 1985) for classifying and describing disasters de-emphasize specific agents and emphasize characteristics of the experience and/or crisis occasion that have more adverse consequences for resources and mental health. From a psychological perspective, the *extent of terror and horror* associated with the event is critical. Following events as varied as the Mt. St. Helens eruption (Murphy, 1985), the Buffalo Creek dam collapse (Gleser, Green, & Winget, 1981), Hurricane Paulina in Mexico (Norris, Perilla, Ibañez, & Murphy, 2001), and the 1997 Polish flood (Norris, Kaniasty, Inman, Conrad, & Murphy, 2002), disaster victims who experienced injuries, bereavement, or threat to life were shown to be at higher risk for poor psychological outcomes. Rescue and recovery workers may be severely exposed to horrific sights even if they escape the terror and threat to life associated with the disaster itself. Transportation accidents, for example, often require prolonged contact with mass death because of the need to recover, identify, transport, and bury human remains (Ursano & McCarroll, 1994).

A very important dimension along which disasters vary is the *impact ratio*, which refers to the proportion of the population that is affected rather than to the absolute number of victims (Green, 1982). This is important because it determines the ability of the community to respond and the extent to which it will need outside help. In a study of 10 counties in eastern Kentucky (Appalachia), USA, affected by the same flood (e.g., Phifer & Norris, 1989), community destruction, defined as the number of victims to non-victims in the respondent's county of residence, predicted increases in depression, anxiety, and somatic symptoms even when the effects of personal loss were controlled. The victims who fared most poorly were those who experienced high levels of personal loss in combination with high levels of community destruction.

Disasters vary in their *rapidity of onset* and *predictability*, attributes that affect how long people have to act or prepare for the ensuing event. For example, flash floods and earthquakes often occur with very little warning, whereas there is often a substantial warning period before riverine floods and hurricanes. Warning systems and the mass evacuations they

the "capabilities" side of the disaster equation includes psychological and social resources as well as material resources, we also understand that intervention efforts directed solely at replacing the latter will undoubtedly fail.

Characteristics

Current schemes (e.g., Bolin, 1985; Green, 1982; Quarantelli, 1985) for classifying and describing disasters de-emphasize specific agents and emphasize characteristics of the experience and/or crisis occasion that have more adverse consequences for resources and mental health. From a psychological perspective, the *extent of terror and horror* associated with the event is critical. Following events as varied as the Mt. St. Helens eruption (Murphy, 1985), the Buffalo Creek dam collapse (Gleser, Green, & Winget, 1981), Hurricane Paulina in Mexico (Norris, Perilla, Ibañez, & Murphy, 2001), and the 1997 Polish flood (Norris, Kaniasty, Inman, Conrad, & Murphy, 2002), disaster victims who experienced injuries, bereavement, or threat to life were shown to be at higher risk for poor psychological outcomes. Rescue and recovery workers may be severely exposed to horrific sights even if they escape the terror and threat to life associated with the disaster itself. Transportation accidents, for example, often require prolonged contact with mass death because of the need to recover, identify, transport, and bury human remains (Ursano & McCarroll, 1994).

A very important dimension along which disasters vary is the *impact ratio*, which refers to the proportion of the population that is affected rather than to the absolute number of victims (Green, 1982). This is important because it determines the ability of the community to respond and the extent to which it will need outside help. In a study of 10 counties in eastern Kentucky (Appalachia), USA, affected by the same flood (e.g., Phifer & Norris, 1989), community destruction, defined as the number of victims to non-victims in the respondent's county of residence, predicted increases in depression, anxiety, and somatic symptoms even when the effects of personal loss were controlled. The victims who fared most poorly were those who experienced high levels of personal loss in combination with high levels of community destruction.

Disasters vary in their *rapidity of onset* and *predictability*, attributes that affect how long people have to act or prepare for the ensuing event. For example, flash floods and earthquakes often occur with very little warning, whereas there is often a substantial warning period before riverine floods and hurricanes. Warning systems and the mass evacuations they

EFFECTS OF DISASTERS

Temporal Dimensions of Disaster Impact

Because disasters are events that unfold over time, it is often useful to differentiate the temporal dimensions of (1) pre-impact, (2) impact, and (3) post-impact phases (e.g., Freedy, Resnick, & Kilpatrick, 1992) in considering the effects of these events. Each phase will have its own stresses, which are manifest in the individual as well as in the social realm.

The *pre-impact period* will consist of a threat and warning phase. Ideally, before a disaster strikes, there should be adequate warning through the mass media and locally through mechanisms such as loudspeakers. Some disasters, like earthquakes, may not allow time for warnings. Authorities, helping agencies, and community organizations can theoretically help to prepare for the disaster by taking protective actions and, if necessary, evacuating the population to safer areas. The form of preparation will depend on the type of disaster, its expected severity, and the resources of the community. Training of community level workers also can be done in advance. When a disaster is probable or imminent, residents may experience generalized fear and worry, anxiety, disturbed sleep, and agitation. Families and friends should try to support and help one another to prepare for the disaster by storing food and other supplies, building protective shelters, or leaving in an organized way, if possible. Right before the disaster is a period of high arousal, apprehension, and fear. Panic can occur but is not common. Whereas some people will take urgent action to protect themselves and others, some individuals may deny or ignore the imminent danger, thus exposing themselves to risk.

At present, the superiority of their warning systems and preparedness may be among the strongest advantages that more developed countries have over less developed countries (UNGAESC, 2000). However, slow onset and predictability do not necessarily translate to greater preparedness or trauma reduction, because potential victims do not always believe or heed such warnings even if they receive them or have real options for avoiding the events. In a study of 777 adults for whom evacuation was at least suggested by authorities prior to hurricanes Hugo (South Carolina, USA, 1989) or Andrew (Florida, USA, 1992), 58% did not evacuate (Riad, Norris, & Ruback, 1999). Among those who did not evacuate, the most common reason was that they had believed that the hurricane was not a serious threat. A smaller but notable percentage indicated that they lacked the resources that would have allowed them to evacuate (e.g., money, transportation, someplace to go).

The *impact stage* is when the disaster strikes. There may be deaths, injuries, and destruction. The duration will vary with the type of disaster, from seconds in the case of earthquakes to minutes or hours for a cyclone or industrial accident, to days and weeks for floods. There is heightened arousal and attention with scanning of the environment for cues for safety or escape. Survival or self-preservation is the chief goal. Most people will behave appropriately to protect themselves and significant others. Family-oriented behavior, intense concern and frantic searching for those not accounted for, and hierarchical roles of caring, with men protecting the women and the women caring for the children, is often seen. There may be clinging onto others seeking the reassurance experienced in sharing the terror. When there has been little or no warning, traumatic shock will be a prominent effect of the impact. Rarely there may be intense panic or paralysis of action that inhibits and delays the person's response.

A sense of helplessness against powerful forces, including feelings of ineffectiveness and inadequacy, may cause the traumatic imprinting of the impact in vivid detail. Later, during recovery, the traumatic event may be repeatedly re-experienced as recurrent, intrusive recollections, images, or dreams to be given meaning and assimilated by the individual. A sense of abandonment may be a powerful and frightening component of the feeling of helplessness. The person or group may feel forsaken by God and humanity. Children who are separated from their parents may especially feel that trusted, good, and protective people have deserted them. Even adults can lose their sense of being safe and invulnerable or of having others who care for them. The yearning for relief and rescue is intense. Prayers, rosaries, or mantras may be repeated incessantly. The victims are sometimes dazed, numbed, and passive; they may show acute stress reactions or inappropriate apathetic and automatic behavior. Usually this *disaster syndrome* is transient, giving way to hyperactivity or to appropriate activity. But in a few cases, it may persist as a numbing of general responsiveness and avoidance behavior. Other people, however, may exhibit great heroism by rescuing those whose lives are in danger, helping and assisting those who are injured, and initiating relief operations.

The *post-impact phase* can be divided (a) into the immediate recoil, relief, or emergency phase and (b) the longer rehabilitation and reconstruction phase. During the recoil period, survivors sometimes initially experience euphoria at having survived in the face of death and destruction. Often such feelings are accompanied by a temporary breakdown of social barriers of class or caste, the forgetting of old quarrels, the sharing of experiences, and elation regarding the altruistic responses of those helping and caring. In contrast, there can be disruption of services, breakdown in community functioning, and complete chaos. This is the period when

emergency operations have to be launched for rescue, first aid, and provision of basic needs like water, food, shelter, clothing, health care, and communication. Sometimes, indigenous leaders arise who serve to organize their community's recovery.

Mrs. K. couldn't sleep the night of July 9th, 1997. Although local officials reported that the rising river would not threaten her community in southeastern Poland for at least another 48 hours, she was too anxious to sleep. She and her husband, both in their late sixties, lived on the top floor of a concrete and boxy apartment building. It was easy to see from the tenth floor the cresting waters of the Odra River. The day before she had insisted that her husband haul all the way to their apartment all items of any value from their basement storage carrel. Neighbors who saw it made fun of her and called her panicky. Early that morning, she began to hear a noise, like a "whisper of an incoming sea wave." She peeked through the window and saw a shiny narrow tongue of water coming straight into her building followed by a rushing wave. She and her husband rushed to wake residents on the lower floors and to help them move their belongings to higher floors. About that time, the water hit the building with a terrifying sound and she felt the entire structure shaking. She has never forgotten that sensation, and that rumbling sound and the shaking still wake her up almost every night. A few people managed to run out of the building, but the water entered the stairwell very quickly and soon all the ground-floor apartments were submerged in the dirty water up to their ceilings.

Electric power was down, the phones were down; soon they would obviously shut down water and the natural gas that most people used for cooking. Mrs. K. felt that the residents had to get organized. She went out onto her balcony, leaned over the railing, and summoned her husband to relay her directives: Everybody should go back to their apartments, the rescue efforts would come much later; they should do something useful in the meantime! Men—start catching water in the bathtubs and other containers, women—take out all the fresh and frozen meat and other perishables and start cooking. Cook everything; just boil it. They should not waste any time. Some people at first were amused and thought that "grandma" must be crazy, but they followed her directions anyway. About five hours later, the gas was shut off.

It took two days to evacuate the building. Helicopters lifted some people up, and boats took the others. During all that time Mrs. K. and her husband coordinated the efforts of their "stairwell community." She devised the plan of who should be evacuated when. She asked all the pet owners to have their pets use a designated and clearly marked space on the roof for their sanitary needs. She had parents of school-age children search their apartments for blackboard chalk to write messages on the roof for the pilots. Whenever there was a drop of goods (e.g., food, water, medicine) from the helicopters, the person intercepting the bag would first take it to Mrs. K., who supervised the distribution. She was one of the last people to leave the building; strapped in a floating device, Mrs. K. was evaluated by boat. She still has "shivers" when talking about it. Six months later, when a researcher arrived in the neighborhood to study the flood, most people immediately directed him to "the stairwell of that older lady who made everybody cook."

In the longer period that follows, the reality of loss, death, and destruction, the unalterable facts of changes in community and personal life, and the prolonged issues of restitution and recovery must be faced. With the passage of time, decline in attention and breakdown of informal support networks, as well as withdrawal of relief and professional assistance, all contribute to grief, anger, and a sense of disillusionment in those affected. Particularly potent in this context is the attitude of others who may now be likely to make the victims feel that they should have recovered and no longer be in need of special interest or support. In some people, psychological distress may be delayed. The explanation is that during acute emergencies, physical safety, treatment of injuries, food, and shelter take priority while emotional problems are suppressed or ignored. Once there is some reduction in the acute stress, the psychological problems may come to the forefront. Psychological reactions for some survivors include symptoms of posttraumatic stress disorder (PTSD), anxiety, or depression, family and marital discord, relationship problems, alcohol and drug abuse, and psychosomatic complaints (for a review of the psychological consequences of disasters, see Green & Solomon, 1995).

Reconstruction involves taking inventory of the destruction and loss, re-establishing a sense of reality, working through the traumatic experience, and adaptation at the individual and community level. Although most communities recover in a reasonable amount of time, this process may be prolonged in some communities, sometimes taking years, sometimes never resolving, and sometimes leaving some individuals within those communities mentally scarred and disabled. If the devastation and damage overwhelm recovery efforts and reconstruction cannot be completed, reminders, inconveniences, and hardships remain, making psychological recovery more difficult. Rehabilitation and resettlement may bring about permanent changes in cultural values, economic structures, and religious and political beliefs. A new chapter in the life of the community may begin with the end of the disaster.

Factors That Influence Disaster Recovery

Disaster recovery is complex because it depends upon severity of exposure, availability of aid, individual vulnerability, and community level dynamics. First and foremost among predictors of recovery is the severity of the person's exposure and losses (Freedy, Resnick, & Kilpatrick, 1992; Freedy, Shaw, Jarrell, & Masters, 1992). Such losses may include not only the obvious losses of objects (housing, personal belongings) but also of personal characteristics (self-esteem, trust, perceived safety), energies (time, money), and conditions (employment). Economic resources in the form

of employment, loans for rehabilitation, resettlement, and rebuilding, or funds for mere existence are of crucial importance in determining posttraumatic adaptation. Attitudes and responses toward victimized individuals can further influence adaptation. When there is adequate social support, and where opportunity structures are in place or created for the affected population to participate in their own rehabilitation and reconstruction, the recovery is usually good for that community as a whole, although some individuals may develop lasting problems. Below we will highlight a few of these factors and dynamics.

Personal Characteristics: At-Risk Groups. Although some distress is quite normal immediately after disasters, most people do not develop more serious, lasting disturbances. Some groups have been found to be more vulnerable to experiencing more lasting effects of disasters than others. Whereas men may be more exposed to trauma related to rescue and recovery, women may be disproportionately exposed to other disaster-related stressors, particularly those that are secondary or vicarious, because of the centrality of home and family in their lives (Gleser, Green, & Winget, 1981; Solomon, Bravo, Rubio-Stipec, & Canino, 1993). After disasters, women generally show higher rates of PTSD, anxiety, and depression than do men (De La Fuente, 1990; North et al., 1999; Shore, Tatum & Vollmer, 1986; Steinglass & Gerrity, 1990). Some recent evidence suggests that the difference between men's and women's outcomes after disasters is greater in societies or groups that foster traditional views of masculinity and femininity, such as Mexico, than in societies that adhere to these traditions less rigidly, such as in African-American culture (Norris et al., 2001). The report from UNGAESC (2000) stressed the need to integrate a gender perspective in humanitarian assistance activities.

Age has attracted a considerable amount of research attention. Studies in the U.S. that have included the full range of adult ages have generally found middle-aged persons at greater risk than either older adults or younger adults for disaster-specific symptoms (e.g., Gleser, Green, & Winget, 1981), in part because they are most likely to experience chronic stressors, such as parenting, financial, or occupational stress (Thompson, Norris, & Hanacek, 1993). However, the strength and even the direction of age effects may vary depending upon the social, cultural, economic, and historical context of the exposed setting (Norris et al., 2002). In children, as in adults, there is a variable rate of traumatic stress following degrees of exposure to danger (Green et al., 1991; LaGreca, Silverman, Vernberg, & Prinstein, 1996; Shannon, Lonigan, Finch, & Taylor, 1994). Witnessing extreme violence, particularly to their parents, is likely to cause serious traumatic stress among children. The report from UNGAESC (2000) stressed

the importance of providing assistance to children and older adults during all phases of emergencies.

Ethnicity has received less attention than have gender and age, but a few studies have found that persons who are ethnic minorities fare more poorly after disasters than their counterparts, presumably because of their lower resources (Palinkas, Russell, Downs, & Peterson, 1992; Perilla, Norris, & Lavizzo, 2002).

Persons with prior psychiatric histories are likely to show post-disaster psychiatric conditions as well. Although there are few data that address whether psychiatric cases are differentially vulnerable to the *effects* of disasters, prospective studies clearly show that pre-disaster symptoms are the best predictors of post-disaster symptoms (e.g., Phifer & Norris, 1989; Smith, Robins, Przybeck, Goldring, & Solomon, 1986). For more information on risk factors for PTSD, see Chapter 2.

Community Dynamics: The Mobilization and Deterioration of Social Support. The ability of social support to protect mental health has been demonstrated repeatedly. The fact that so many people are in need simultaneously complicates the role of social support in disaster-stricken communities (see Kaniasty & Norris, 1997; 1999). Disaster victims often find it difficult to maintain supportive relationships just when they need them the most. The initially heightened level of helping and concern seldom lasts for the full length of the recovery process. Because disasters affect entire networks, the need for support may simply exceed its availability, causing expectations of support to be violated. Relocation, and even death in the most severe cases, removes important others from victims' supportive environments. Physical fatigue, emotional irritability, and scarcity of resources increase the potential for interpersonal conflicts and social withdrawal. Moreover, as time passes, supportive networks may become saturated with stories of and feelings about the event. Consequently, victims and their supporters begin to minimize or downplay the importance of sharing their emotions or may even escape interacting. Thus, over time, social relationships are strained, and this causes psychological distress for many survivors.

In addition, it is common for conflicts to arise after disasters because of actual or perceived inequities in the distribution of aid. When communities function well, the most support will go to those who need it the most. Typically, however, need is not the only determinant of received support. In some cultures and settings, patronage systems still predominate, and consequently the amount of help received may be determined more by whom one knows than by what one needs. Often, racial and ethnic minorities and persons of lower socioeconomic status receive less help than other

victims who have comparable levels of need, placing them at greater risk for continuing losses and psychological distress (Kaniasty & Norris, 1995).

Cultural Variations in Effects

Health professionals must be sensitive to the varying ways in which distress may be expressed or displayed cross-culturally. Although many human emotions are experienced universally, they may take different forms. A finding commonly noted in the cross-cultural psychiatry literature (e.g., Kirmayer, 1996) is the predominance of somatic symptoms in non-Western societies. Too much reliance on "Western" definitions of post-traumatic stress may cause important expressions or idioms of distress to be missed. Idioms of distress are folk categories that are used by people in many different ways to explain a wide range of problems. For example, in studies of disasters and trauma in Latin America, several culturally-specific idioms of distress have been identified. In Jenkins' (1996) work with Salvadoran refugees, *el calor* (the heat) stood out as a particularly salient form of bodily experience. Likewise, studies of Puerto Rican trauma victims have shown that *ataques de nervios* (acute episodes of emotional upset and loss of control) are very important to consider (Guarnaccia, Canino, Rubio-Stipic, & Bravo, 1993). Yet another example from Latin America is *susto*, which literally means "the fright" (e.g., Hough, Canino, Abueg, & Gusman, 1996; Kirmayer, 1996). Spanish-speaking persons often attribute a wide range of symptoms to a frightening experience and thus name their resulting discomforts after the *susto* they believe is the cause. *El susto* tends to be recognized in retrospect, after symptoms bring about the recollection of a traumatic experience. *Susto* is more the explanation than the illness itself, since the latter is manifested in different ways, including weakness, sadness, fatigue, and fearfulness.

In 1992, Carmen Sanchez's family was among several Mexican families living in Homestead, Florida that were unable to evacuate the area even though they knew Hurricane Andrew was approaching. Carmen's family and four other families took shelter in one small trailer. In order to hold the trailer safely in place under the force of massive wind gusts, the men found a truck door and tied it to the trailer's roof. Although weighted down by the heavy truck door, the trailer was rocked by wind. At one point, the air conditioning unit became dislodged from the window. Santiago, Carmen's 45-year-old uncle, grabbed the air conditioner but then found himself being sucked out of the window as well. The men in the trailer quickly grabbed Santiago and pulled him back inside. Once safely inside the trailer, Santiago was quiet and his face was discolored.

In the weeks following the hurricane, Santiago refused to eat and became very skinny. He became confused, disoriented, and was unable to sleep. He became

apathetic and depressed. He also suffered from diarrhea and other stomach ailments. When it would start to rain, he would lock himself indoors and refuse to leave his home. Carmen and her family recognized this as susto or fright sickness. Literally, susto refers to the loss of one's soul from one's body due to fright. In order to help her uncle, Carmen sought the aid of a folk healer, who performed a ceremony known as the barrida or sweeping. The folk healer brushed Santiago with herbs and recited ritual prayers. In addition, the folk healer and other people from the community talked to Santiago in order to pull his frightened soul back into his body. Following several repetitions of this ceremony, Santiago was healed from susto.

INTERVENTIONS

Perhaps the most important lesson to be learned from the research summarized in the previous section is that the stress precipitated by catastrophic disasters is often long-lasting. Thus the response to a disaster must include ongoing attention to the psychosocial aspects of the event as part of the overall emergency response—for without mental health being established first or concurrently, reconstruction efforts may not be of much benefit. In developing an overall integrated scheme for rehabilitation, it is essential to take a systems approach, acknowledging that individuals, families, communities, and political forces each influence the others. Moreover, different types of interventions are called for during different phases of the event.

It is traditional to talk about three types of prevention (Caplan, 1964). *Primary prevention* aims to lower the rate of *new* cases of mental disorder by counteracting harmful situational circumstances before they have had a chance to produce illness, or by strengthening individual-based resources. With regard to the aims of this chapter, we can think of primary prevention interventions as those that attempt to reduce the prevalence or trauma potential of disasters in the future (and thus correspond to the pre-impact phase).

Secondary prevention is initiated at the early stages of crisis and targets those most at-risk. The assumption of secondary prevention is that by identifying problems early, more serious psychosocial problems can be avoided. Secondary prevention programs generally attempt to expand the reach of the mental health system by using both individual-based and system-based resources effectively. Interventions that take place in the aftermath of disasters (impact and post-impact phases) often have such secondary prevention goals.

Tertiary prevention resembles individual rehabilitation in that it is initiated after damage has occurred, but it differs from individual rehabilitation in being large enough in scale to reduce the prevalence of disorder in the

population. Most disaster survivors will recover successfully, but a minority of persons may require more formal or professional level mental health care. Specialized psychotherapeutic interventions will not be discussed in this chapter; information on them is provided in Chapter 4. In this section, we will focus on primary and secondary prevention strategies that apply to disaster mitigation and recovery.

Pre-Impact Interventions: Trauma Prevention and Hazard Preparedness

Although floods, earthquakes, and hurricanes may not be preventable, much of the destruction they cause can be avoided by appropriate policies and plans at the societal level. This is even more true for human-caused (or technological) disasters. In many cases, it is discovered after the fact that building codes had been ignored, communities had been located in dangerous areas, warnings had not been issued or followed, or plans had been forgotten. Serious attention should be paid to prevention in the future as we develop a better understanding of disasters: how and why they occur, their effects, and how best to manage their short- and long-term mental health consequences. The report from UNGAESC (2000) emphasized the need to strengthen disaster preparedness and early warning systems at the country and regional level and cited collaborative efforts in Ethiopia and Vietnam as examples.

At the community level, interventions that provide adequate warning and information about evacuation procedures are particularly important. As noted previously in this chapter, such actions not only save lives but also protect mental health by reducing exposure of the public to the most traumatic elements of disasters (injury, threat to life, and bereavement). Almost any community can benefit from developing strategies and procedures for warning and evacuating people when it is appropriate. There is no one simple formula for how to do this, because any plan must take into account the probable threats (e.g., volcano, hurricane, chemical plant), resources (e.g., transportation, shelter), attitudes (e.g., understanding of risk, fear of looting, trust in authorities), social networks (e.g., informal communication channels), economic realities (e.g., willingness to leave land to which there is no title), and communication infrastructures (e.g., ability to reach people by television or radio) of the area involved. There are even creative examples available of plans and exit routes developed using narratives of indigenous communities: for instance, the *Just in Case* program developed by researchers in Puebla and Mexico City, Mexico for a community that has lived at the base of the volcano *Popocatepetl* (*Popo*) for centuries. It is believed in this community that *Don Gregorio*, the local name for the volcano,

will warn the local villagers if he is about to erupt. But *just in case* Don Gregorio doesn't oblige, the community now also has a civil defense plan. For example, each family has been given a clear, sealable bag to protect their valuable papers—and on it is imprinted the evacuation route and procedures.

Previous research suggests that intervention efforts can also be effective in enhancing family and individual disaster preparedness. Hazard-preparedness is a multi-dimensional behavior (Faupel, Kelley, & Petee; 1992; Mulilis & Lippa, 1990; Norris et al., 1999) involving *proactive strategies* (e.g., having escape plans, keeping supplies on hand), *vigilance* (e.g., remaining alert to potential hazards), and *reactive strategies* (e.g., boarding windows, evacuating). Though disaster preparedness is difficult to promote, beliefs that people can influence their own chances of surviving can lead to precautionary acts (Mulilis & Duval, 1995). Consequently, at least in developed countries, programs that attempt to educate citizens to change those behaviors that place them at risk undoubtedly constitute the most widely used prevention approach.

Impact and Post-Impact Interventions: Community Development, Crisis Counseling, and Psychoeducation

In the immediate aftermath of disasters, interventions focus on the management of the crisis. Although such interventions take place within a specific community context, the planning for them is often initiated at societal and policy levels. In the United States, for example, the federal government provides funding and technical support for post-disaster mental health interventions and has often taken the lead in promoting local planning efforts. As an example of this, we reproduce the "salient points for disaster management" published by the Emergency Services Branch of the U.S. Substance Abuse and Mental Health Administration in 1994.

- No one who experiences the event or sees the event is untouched by it. Individuals find comfort and reassurance when told that their reactions are normal and understandable. Therefore, mental health workers have to educate people about common disaster stress reactions, ways to cope with stressors, and available resources to respond to their needs. Relief from stress, ability to talk about the experience, and passage of time usually lead to the reestablishment of equilibrium. Most people pull together and function during and after a disaster, but their effectiveness is diminished.
- Loss of natural buffers in the community is less visible. Mental health interventions should seek to reestablish linkages between individuals and groups through outreach, support groups, and community organizations.

- Disaster mental health services must be uniquely tailored to the communities they serve. Such programs are most effective if workers indigenous to the community and to its various ethnic and cultural groups are integrally involved in service delivery.
- Survivors respond to active interest and concern.
- Interventions must be appropriate to the phase of disaster.

Community level interventions aim to foster community competence and ownership of problems and solutions. Mary Harvey (1990) may be among the most vocal advocates for the use of a system level perspective in the aftermath of disaster. In her view, trauma emanates from profound powerlessness. The emphasis for intervention, then, should be on empowerment, meaning such interventions need to emphasize strengths, mobilize the community's capabilities, and help the community to become self-sufficient. Too much reliance on outside professionals can amplify a community's trauma. According to Harvey, one of the major tasks of a community crisis response is to identify existing resources and resource gaps: "What's there? What isn't? Can we fill the gap?" It is critical to make use of existing resources, i.e., to include any individual, setting, and hidden resource that can be affirmed and integrated into the response plan. Likewise, Van Den Eynde and Veno (1999) argue that caregivers' roles in the aftermath of disasters must be to facilitate rather than to direct, to encourage the development of new organizational skills, to support community action, and explicitly to resist a "victim community" approach in favor of a "competent community" approach. In a community-centered intervention, the community itself plays an active role in shaping the intervention. The most appropriate post-disaster intervention may be one that aims to build the community's capacity to make informed choices, while recognizing that those choices and responsibility for recovery remain the community's own. No one post-disaster intervention strategy can fit all communities, cultures, or contexts. However, there are methods, tools, and materials that communities can use to characterize and assess their own psychosocial needs.

In the aftermath of disasters, crisis counseling is probably the most common intervention. This strategy often blurs boundaries between community and individual level interventions because crisis programs tend to be enacted at the community level but are targeted at individual level change. Although crisis intervention encompasses a wide range of activities directed toward persons experiencing acute distress, it most often takes the form of making individual or group counseling quickly and easily available to victims. As a strategy for prevention, crisis intervention is particularly appropriate when (a) the event cannot be prevented and

(b) the at-risk population is readily identified and available for interventions. Disasters, by their collective and uncontrollable nature, provide an ideal setting for crisis intervention. Numerous authors (e.g., Cohen, 1985; Myers, 1989; Seroka, Knapp, Knight, & Starbuck, 1986) have advocated the use of crisis intervention following disasters to prevent the development of psychopathology and have offered useful guidelines for such services.

One such guideline is that crisis counseling programs should assume a proactive posture rather than a reactive one in identifying persons in need of services. This posture involves active case-finding and outreach services in the community. Outreach is needed because many people who need help may not seek it. A reluctance to use formal assistance may reflect an emphasis on independence and "carrying one's own weight" or a belief that one should rely on one's family for care and support. In most communities and locales, a traditional "office" approach in which the clients are self-referred will not be effective after disasters.

Likewise, crisis intervention programs must be tailored to the cultural and community context (for in-depth discussion of these intervention issues, see Danieli, Rodley, & Weisaeth, 1996; de Jong, 1995; Gist & Lubin, 1999). Many cultures attach stigma to receiving psychological help. Whereas some cultures encourage the expression and sharing of feelings (Wierzbicka, 1994), others discourage public expression of emotion and the seeking of emotional support (Ellsworth, 1994).

In September 1999, an accident at the Tokai-Mura Nuclear Fuel Processing Facility exposed 69 workers directly to radiation and forced persons living near the facility to evacuate from their homes. Psychologists at Sophia University were asked to provide psychological assistance to the community. They provided consultation services and seminars for local helping professions, such as public health nurses, school teachers, and counselors, some of whom were victims themselves. The services they provided were designed to fit Japanese culture in several ways. First, the seminars were titled "Helping Children," because the consultants reasoned that people would be less resistant to this topic than one described as dealing with their own mental health issues. Also, the purpose of the seminar was described as "information provision," rather than "emotional support" or "debriefing," because seeking information is considered more culturally appropriate than sharing feelings or seeking emotional support. Yet the seminar was actually designed to provide an environment where such support would be received along with the information provided. By eliminating the threat of stigma, the consultants provided an effective means to provide crisis intervention in Japan (Inamoto & Konishi, 2000).

Sometimes, crisis counseling differs from corrective therapy more in timing and scope than in orientation. One lesson that appears to be very difficult to learn is the irrelevance of mental health programs to persons who have more immediate and basic needs. Lois Gibbs' (1982) story is

illustrative: Following the first crisis at Love Canal, New York (an infamous case of residential toxin exposure; see Gibbs, 1982), the local mental health clinic arrived on site and set up a display to offer services. According to Gibbs, a resident and grass-roots organizer, the "beaming" Mental Health Center sign alienated most of the residents. People avoided these professionals to protect their images and reputations. Gibbs believed those professionals were desperately needed, but that they should have been more sensitive to community attitudes and needs. As others (e.g., Faberow, 1978) have also noted, outreach efforts to victims are most effective when they take the form of assisting them with the variety of practical problems that arise during the impact period, such as needs for housing, insurance settlements, medical care, material aid, and social services. Some people are more likely to accept help for such "problems in living" than to accept help for "mental health problems." Practical, resource-oriented help may be every bit as important for the preservation or restoration of mental health.

Though retaining a focus on mental health, Gist and Stolz's (1982) intervention following the Hyatt disaster differed greatly from the provision of on-the-spot, brief psychotherapy that has characterized many crisis counseling programs. Following the dramatic "skywalk" disaster at the Hyatt Regency Hotel in Kansas City, Missouri, where an internal "bridge" collapsed, killing more than one hundred people and injuring many more, these authors, along with others in their community, enacted a "three-fold community-wide response" (p. 1137). First, support groups were initiated by community mental health centers in every part of the metropolitan area. Second, trauma-related training was provided to both psychologists and natural caregivers (e.g., ministers) in the area. Third, the media were engaged to publicize the availability of services, to describe typical psychological reactions to disaster, and to communicate that these reactions were normal reactions to abnormal situations that should be accepted and discussed with friends and colleagues. In the month following the skywalk's collapse, 500 persons participated in support groups, and 200 professionals attended training programs. Gist and Stolz believed that the aggressive media campaign freed those at risk from the stigma of seeking psychological help. Empirical data are lacking, but the authors built a good case for the success of the intervention.

In many ways, the Kansas City program could stand as a model for crisis counseling initiatives. Particularly appealing was the effort to normalize rather than to pathologize distress. The fit between the goals of the program and the community's needs and resources was excellent. As for the generalizability of the model, it is important to recognize that Kansas City's communication and general infrastructure of goods and services were left

intact. The media would be more difficult to exploit in settings where electricity is lacking and communication systems are impaired. However, as the following case study illustrates, similar psychoeducational approaches can be used even after larger-scale disasters. As this example shows, primary care physicians often serve as the first point of referral for the care of mental health needs of adults and very young children, while teachers are key in identifying the mental health needs of school-age children. Many communities will need to designate some individuals to be community health workers. Such persons will disseminate information and stimulate and support community efforts.

A supercyclone hit the Orissa coast of India on October 29, 1999. The wind force was more than 250 kms per hour, creating sea waves 20 to 30 feet high. This disaster affected over 15 million people living in 12 districts, killing 10,000 and leaving millions homeless. The most striking aspect of this disaster was the extensive damage to the trees, animals, and houses. A series of studies of individuals in the disaster zone showed that 65% had mental health problems, of which 25% were severe. Visits by specialists confirmed the high level of psychosocial problems and psychiatric symptoms in the population. Against this background, the number of mental health resources available in the whole state was extremely small. There were only 31 psychiatrists and even fewer clinical psychologists and psychiatric social workers.

This disaster was important for causing the psychosocial problems of the affected population to be recognized. A specific program to meet the needs of the population was initiated that had the following components:

1. *A simple information booklet, written at an accessible level for all the affected population, which described how people could take care of their own health by measures that are within their reach.*
2. *A more detailed booklet, prepared for all categories of community level workers to provide support and information on first-aid and referral procedures and to stimulate community support systems.*
3. *A program of training in mental health care developed for primary care physicians.*
4. *A manual developed for teachers to help them provide mental health care to affected children.*

This discussion has focused on the provision of services to survivors, but it should be noted that disaster workers themselves experience considerable trauma. This observation has led some practitioners to develop intervention strategies especially tailored for emergency-service personnel. The best-known of these may be Critical Incident Stress Debriefing (CISD; Mitchell, 1983). A critical incident is defined as "any situation faced by emergency service personnel that causes them to experience unusually strong emotional reactions which have the potential to interfere with their ability to function either at the scene or later" (Mitchell, 1983, p. 36). To

defuse the stress, group meetings and structured discussions are held that emphasize normal responses to abnormal events. Typically, these meetings take place within one to three days after an incident. Following the 1989 San Francisco earthquake, for example, Armstrong, O'Callahan, and Marmar (1991) modified and expanded CISD into a Multiple Stressor Debriefing Model for use with Red Cross volunteers and personnel. CISD has found wide acceptance by the professional mental health community, but well-controlled studies documenting its effectiveness are generally lacking. See Chapter 14 for a more detailed discussion of interventions for civilian and field personnel.

RECOMMENDATIONS

In accord with the previous discussion we make the following recommendations for disaster management:

Recommendations for Policy-Makers

- Increase global access to technologies that provide advance warning of many disaster agents, e.g., floods, hurricanes, volcanic eruptions.
- Develop international/national/provincial plans for a mental health-oriented response to disasters that establish collaborative relationships among formal emergency management agencies, public health agencies, and citizen's groups.
- Develop culturally appropriate interventions that educate the public about disaster preparedness. Like other behavioral interventions, campaigns to educate the public about disaster preparedness must focus on specific suggestions and will be most effective if they successfully communicate that the behavior is necessary (vulnerability), that the behavior is effective (controllability), that the recipient of the message has the skills needed to perform the behavior (self-efficacy), that others expect the recipient to act (norms), and that the behavior will show a concern for the welfare of others (moral obligation). Different aspects of the message might be emphasized (e.g., norms, moral obligation) or de-emphasized (controllability) as culturally appropriate for the community involved.
- Support research on the effects of disasters. Following most disasters, research gets a very low priority. To date, few disaster-focused interventions have been evaluated empirically and fewer still have met standards of rigorous research (Burkle, Bolton, & Watson, 2001).

Recommendations for Disaster Managers

- *Provide accurate and consistent information.* The importance of accurate, trustworthy, easily understood, and consistent information about the disaster and its consequences, especially if there are continuing threats, cannot be overemphasized.
- *Train rescue and relief workers to provide psychological first aid.* Regardless of their specific duties, rescue and relief workers should be sensitive to survivors' psychosocial needs. Workers must interact with survivors in a caring and supportive way and attempt to provide reassurance, basic information, and referrals to helping agencies.
- *Educate health care providers, teachers, and community workers about mental health.* Basic knowledge about mental health, simple interventions, and ways to identify and refer problematic cases is helpful to both the workers and the community as a whole. A manual such as the WHO/UNHCR *Mental Health of Refugees* (De Jong & Clark, 1992) that has been adapted to the local cultural context can be used.
- *Educate the public.* The affected population will need clear information about normal reactions to stress, what to do and not to do, and when and where to seek help. Pamphlets, such as *Coping with Stress*, produced by the Royal Children's Hospital and Prince Henry Hospital following the Ash Wednesday fires in Australia, can be used for this purpose. Where feasible, various media can also be engaged to help with this task.
- *Initiate crisis intervention services.* Various professionals and paraprofessionals from inside or outside the community can be called upon to provide services and support to survivors as well as first-line rescue and relief workers. Although needs vary depending upon the nature of the disaster, such services might include (a) crisis counseling, (b) debriefing of workers, (c) assistance in notifying families regarding death of kin and helping them with identification of bodies, (d) establishing links between disaster services and pre-existing helping structures, and (e) organizing self-help, support, or community action groups.
- *Establish integrated, ongoing services.* In situations where ongoing, specialized mental health care is needed and available, it may be useful to establish a center where multidisciplinary teams can work together to intervene on behalf of individuals, families, or the community as a whole. The team might include psychiatrists, psychologists, counselors, social workers, nurses, creative therapists, relaxation therapists, alcohol and drug therapists, or occupational therapists.
- *Involve the community and identify their strengths.* To be effective, any such program must involve the participation of the local population in an

active and decision-making role rather than in a dependent, "victim" role. Local skills and resources have to be tapped and utilized if the community is to gain a sense of accomplishment and fulfillment in the reconstruction process.

- *Provide meaning.* Provision for the cultural working-through of the shared traumatic experience, in the form of periodic reminders of the loss and reiteration of its meaning, will be helpful. Community gatherings, meetings, and religious ceremonies will allow for communal release of feelings and coming to terms with the collective trauma. Such gatherings help people to define and interpret their experiences, to establish social links, and to plan for the future.

Recommendations for the Community

No one set of recommendations will apply to all communities cross-culturally. It is important that the activities match the cultural context and needs of the group (De Jong, 1995; De Vries, 1995). The best way to assure this is to involve the community in evaluating its own needs and typical ways of behaving and determining which actions are most suitable (Figley, Giel, Borgo, Briggs, & Haritos-Fatouros, 1995). We offer these suggestions as starting points for discussion but emphasize that community groups will need to tailor them to their own particular contexts.

- *Grieve and sing together.* Grief resolution should occur at the personal, family, and community levels. Collective grieving expresses solidarity and facilitates unity and collective action. Such activities should be organized initially on a weekly basis, then a monthly basis, and later annually. Folk songs and devotionals that describe the tragedy and its impact provide another way for communities to share their grief. Such actions may increase the cohesiveness of the community and motivate participants to initiate collective action.
- *Meet.* Group meetings are important activities in which the community as a whole participates. Participants think and brainstorm about various themes for rebuilding the community. This not only helps them to come to terms with the reality of loss but also helps them to identify and discuss local problems and initiate collective action toward such goals as rebuilding school or roads, restoring power or water, or providing access to medical care. Encourage survivors to share their success stories (coping with loss) with others in group meetings. This will make them feel good and may benefit others. Such forums may also provide a way to stay informed about the relative needs of network members.

- *Hold rallies.* This conveys solidarity and strength and sensitizes administrative bodies that can address delays in restoration, rebuilding, relocation, or compensation.
- *Work together toward achievable, specific goals.* Clearing the bushes to create a playground for children, putting up a hut for a school, or devising a plan for providing food for survivors who are disabled or dependent brings communities closer together.
- *Be inclusive.* Involve religious leaders, opinion leaders, and village members in all these activities. Reach out to people who might feel isolated or marginalized. Consider ways of canvassing the community to learn of the needs of others.
- *Seek and provide accurate information.* Uncertainty can create much stress. Create mechanisms for keeping the community informed about problems and progress. Sensitize the group about rumors and discuss ways to handle them as a group.

Recommendations for Families

- *Keep the family together.* Sending women, children, and the aged to far-off places for the sake of safety can be anxiety-producing for them and other family members. If a family member must be separated or hospitalized, keep him/her informed about the safety of the others. Get information about his/her condition as often as possible.
- *Have family members talk* about their experiences, losses, and feelings with one another.
- *Contact relatives* outside the disaster zone to ease their fears and mobilize support.
- *Enact rituals and other meaningful activities* such as prayers or preserving the belongings of a lost family member.
- *Resume normal activities* to provide a sense of stability and provide important ways for network members to stay informed about the needs of other members.
- *Handle conflict appropriately* to minimize increases in negative encounters due to the strain, fatigue, and irritability that may follow trauma. Be tolerant, but help family members direct their anger into appropriate channels.

Recommendations for Individuals

- *Seek accurate information* and do not believe in rumors that go around during such times.
- *Establish daily routines* as early as possible to help you feel in control of the situation.

- *Talk and listen.* Though all of you have had the same experience, it will do you good to talk about the disaster, your experiences, and your feelings with family members and friends. Tell others you understand how they feel.
- *Seek and give comfort.* Touching and comforting your family members, especially children and old people, is beneficial to you and others.
- *Get to know others.* Even in temporary dwellings it is good to be with known community people, i.e., people from your own village. Consider organizing the new community, if someone else has not done so.
- *Join or initiate rituals.* Rituals, like prayers or mourning, are very helpful; so join or initiate such rituals. If you have lost family members, perform the last rites, and bid them farewell.
- *Work.* If you are unhurt, take part in the rescue, relief, and rehabilitation operations. Work is a good tonic for healing.
- *Relax and recreate.* Take time every day to relax. Go for a walk, exercise, listen to music, visit the temple, sing or pray, and invite others to join you.
- *Accept your limitations.* Make time for yourself and recognize that it may be weeks or months before you are able to function at your usual level of efficiency.

ACKNOWLEDGEMENT: The authors wish to thank Krzysztof Kaniasty, Professor of Psychology at Indiana University of Pennsylvania, for the story about the Polish lady who made everyone cook.

REFERENCES

Armstrong, K., O'Callahan, W., & Marmar, C. (1991). Debriefing Red Cross disaster personnel: The Multiple Stressor Debriefing Model. *Journal of Traumatic Stress, 4*, 581–594.

Baum, A. (1987). Toxins, technology, and natural disasters. In G. VandenBos & B. Bryant (Eds.), *Cataclysms, crises, and catastrophes: Psychology in action* (pp. 9–51). Washington, DC: APA.

Baum, A., Fleming, R., & Davidson, L. (1983). Natural disasters and technological catastrophe. *Environment and Behavior, 15*, 333–354.

Bolin, R. (1985). Disaster characteristics and psychosocial impacts. In B. Sowder (Ed.), *Disasters and Mental Health: Selected Contemporary Perspectives* (pp. 3–28). Rockville, MD: National Institute of Mental Health.

Bromet, E. (1995). Methodological issues in designing research on community-wide disasters with special reference to Chernobyl. In S. Hobfoll & M. De Vries (Eds.), *Extreme stress and communities: Impact and intervention* (pp. 307–324). Dordrecht, The Netherlands: Kluwer.

Burkle, F., Bolton, P., & Watson, P. (2001). *Disaster-related mental health interventions: Review of the published literature.* White River Junction, VT: National Center for Posttraumatic Stress Disorder.

Caplan, G. (1964). *Principles of preventive psychiatry.* New York: Basic Books.

Cohen, R. (1985). Crisis counseling principles and services. In M. Lystad (Ed.), *Innovations in mental health services to disaster victims* (pp. 151–160). Rockville, MD: National Institute of Mental Health.

Danieli, Y., Rodley, N., & Weisaeth, L. (Eds.) (1996). *International responses to traumatic stress: Humanitarian, human rights, justice, peace and development contributions, collaborative actions, and future initiatives*. Amityville, New York: Baywood Publishing.

DeGirolamo, G., & McFarlane, A. (1996). The epidemiology of PTSD: A comprehensive review of the international literature. In A. Marsella, M. Friedman, E. Gerrity, & R. Scurfield (Eds.), *Ethnocultural aspects of posttraumatic stress disorder: Issues, research, and clinical applications* (pp. 33–86). Washington, D.C.: APA.

De Jong, J. (1995). Prevention of the consequences of man-made or natural disaster at the international, the community, the family, and the individual level. In S. Hobfoll & M. De Vries (Eds.), *Extreme stress and communities: Impact and intervention* (pp. 207–227). Dordrecht, The Netherlands: Kluwer.

De Jong, J., & Clark, L. (1992). *WHO/UNHCR Mental health training manual*. WHO: Geneva.

De La Fuente, R. (1990). The mental health consequences of the 1985 earthquakes in Mexico. *International Journal of Mental Health, 19*, 21–29.

De Vries, M. (1995). Culture, community and catastrophe: Issues in understanding communities under difficult conditions. In S. Hobfoll & M. De Vries (Eds.), *Extreme stress and communities: Impact and intervention* (pp. 375–393). Dordrecht, The Netherlands: Kluwer.

Edelstein, M.R. (1988). *Contaminated communities: The social and psychological impacts of residential toxic exposure*. Boulder, CO: Westview.

Ellsworth, P. (1994). Sense, culture, and sensibility. In S. Kitayama & H. Markus (Eds.), *Emotion and culture: Empirical studies of mutual influence* (pp. 23–50). Washington, D.C.: American Psychologcial Association.

Ersland, S., Weisaeth, L., & Sund, A. (1989). The stress upon rescuers involved in an oil rig disaster. "Alexander L. Kielland" 1980. *Acta Psychiatrica Scandinavica Supplementum, 80*, 38–49.

Faberow, N. (1978). *Training manual for human service workers in major disasters*. Washington, DC: U.S. Government Printing Office (DHEW Publication No. ADM 77-538).

Faupel, C., Kelley, S., & Petee, T. (1992). The impact of disaster education on household preparedness for Hurricane Hugo. *International Journal of Mass Emergencies and Disasters, 10*, 5–24.

Figley, C., Giel, R., Borgo, S., Briggs, S., & Haritos-Faturos, M. (1995). Prevention and treatment of community stress. In S. Hobfoll & M. De Vries (Eds.), *Extreme stress and communities: Impact and intervention* (pp. 489–497). Dordrecht, The Netherlands: Kluwer.

Freedy, J., Resnick, H., & Kilpatrick, D. (1992). Conceptual framework for evaluating disaster impact: Implications for clinical intervention. In L. Austin (Ed.), *Responding to disaster: A guide for mental health professionals* (pp. 3–23). Washington, DC: American Psychiatric Press, Inc.

Freedy, J., Shaw, D., Jarrell, M., & Masters, C. (1992). Towards an understanding of the psychological impact of natural disasters: An application of the Conservation Resources stress model. *Journal of Traumatic Stress, 5*, 441–454.

Gibbs, L. (1982). Community response to an emergency situation: Psychological destruction and the Love Canal. *American Journal of Community Psychology, 11*, 116–125.

Gist, R., & Lubin, B. (1999). *Response to disaster: Psychosocial, community and ecological approaches*. New York: Brunner/Mazel.

Gist, R., & Stolz, S.B. (1982). Mental health promotion and the media: Community response to the Kansas City hotel disaster. *American Psychologist, 37*, 1136–1139.

Gleser, G., Green, B., & Winget, C. (1981). *Prolonged psychosocial effects of disaster: A study of Buffalo Creek*. New York: Academic Press.

Green, B. (1982). Assessing levels of psychological impairment following disaster: Consideration of actual and methodological dimensions. *Journal of Nervous and Mental Disease, 170*, 544–552.

Green, B., Korol, M., Grace, M., Vary, M., Leonard, A., Gleser, G., & Smitson-Cohen, S. (1991). Children and disaster: Age, gender, and parental effects on PTSD symptoms. *Journal of the American Academy of Child and Adolescent Psychiatry, 30*, 945–951.

Green, B., & Solomon, S.D. (1995). The mental health impact of natural and technological disasters. In J. Freedy & S. Hobfoll (Eds), *Traumatic stress: From theory to practice* (pp. 163–180). NY: Plenum Press.

Guarnaccia, P., Canino, G., Rubio-Stipec, M., & Bravo, M. (1993). The prevalence of ataques de nervios in the Puerto Rico disaster study. *The Journal of Nervous and Mental Disease, 181*, 157–165.

Harvey, M. (1996). An ecological view of psychological trauma and trauma recovery. *Journal of Traumatic Stress, 9*, 3–23.

Hough, R., Canino, G., Abueg, F., & Gusman, F. (1996). PTSD and related stress disorders among Hispanics. In A. Marsella, M. Friedman, E. Gerrity, & R. Scurfield (Eds.), *Ethnocultural aspects of posttraumatic stress disorder: Issues, research, and clinical applications* (pp. 301–340). Washington, D.C.: APA.

Inamoto, E., & Konishi, T. (2000, November). The psychological response of residents in the aftermath of the radiation accident at Tokai-Mura, Ibaraki Prefecture, Japan. Paper presented at the annual meeting of the International Society for Traumatic Stress Studies, San Antonio, Texas.

International Federation of Red Cross and Red Crescent Societies (1999). *World disaster report*. Dordrecht, The Netherlands: Martinus Nijhoff.

International Federation of Red Cross and Red Crescent Societies (2002). *World disasters report 2002*. Bloomfield, CT: Kumarian Press, Inc.

Jenkins, J. (1996). Culture, emotion, and PTSD. In A. Marsella, M. Friedman, E. Gerrity, & R. Scurfield (Eds.), *Ethnocultural aspects of posttraumatic stress disorder: Issues, research, and clinical applications* (pp. 165–182). Washington, D.C.: APA.

Kaniasty, K., & Norris, F. (1995). In search of altruistic community: Patterns of social support mobilization following Hurricane Hugo. *American Journal of Community Psychology, 23*, 447–477.

Kaniasty, K., & Norris, F. (1997). Social support dynamics in adjustment to disasters. In S. Duck (Ed.), *Handbook of personal relationships* (2nd edition) (pp. 595–619). London, UK: Wiley.

Kaniasty, K., & Norris, F. (1999). Individuals and communities sharing trauma: Unpacking the experience of disaster. in R. Gist & B. Lubin (Eds.), *Psychosocial, ecological, and community approaches to understanding disaster* (pp. 25–62). London: Brunner/Mazel.

Kirmayer, L. (1996). Confusion of the senses: Implications of ethnocultural variations in somatoform and dissociative disorders for PTSD. In A. Marsella, M. Friedman, E. Gerrity, & R. Scurfield (Eds.), *Ethnocultural aspects of posttraumatic stress disorder: Issues, research, and clinical applications* (pp. 165–182). Washington, D.C.: APA.

Kroll-Smith, J.S., & Couch, S. (1993). Technological hazards: Social responses as traumatic stressors. In J.P. Wilson & B. Raphael (Eds.), *International handbook of traumatic stress syndromes* (pp. 79–91). New York: Plenum Press.

La Greca, A., Silverman, W., Vernberg, E., & Prinstein, M. (1996). Symptoms of posttraumatic stress in children after Hurricane Andrew: A prospective study. *Journal of Consulting and Clinical Psychology, 64*, 712–723.

Mitchell, J. (1983). When disaster strikes... The critical incident stress debriefing process. *Journal of Emergency Medical Services, 8*, 36–39.

Mulilis, J., & Duval, S. (1995). Negative threat appeals and earthquake preparedness: A person-relative-to-event (PrE) model of coping with threat. *Journal of Applied Social Psychology, 25*, 1319–1339.

Mulilis, J., & Lippa, R. (1990). Behavioral change in earthquake preparedness due to negative threat appeals: A test of protection motivation theory. *Journal of Applied Social Psychology, 20*, 619–638.

Murphy, S. (1985). Health and recovery status of victims one and three years following a natural disaster. In C. Figley (Ed.), *Trauma and its wake, Vol II.* (pp. 155). New York: Brunner/Mazel.

Myers, D. (1989). Mental health and disasters: Preventive approaches to intervention. In R. Gist & B. Lubin (Eds.), *Psychosocial aspects of disaster* (pp. 190–228). New York: John Wiley & Sons.

Norris, F., Kaniasty, K., Inman, G., Conrad, L., & Murphy, A. (2002). Placing age differences in cultural context: A comparison of the effects of age on PTSD after disasters in the U.S., Mexico, and Poland. *Journal of Clinical Geropsychology, 8*, 153–173.

Norris, F. & Murrell, S. (1988). Prior experience as a moderator of disaster impact on anxiety symptoms in older adults. *American Journal of Community Psychology, 16*, 665–683.

Norris, F., Perilla, J., Ibanez, G., & Murphy, A. (2001). Sex differences in symptoms of PTSD: Does culture play a role? *Journal of Traumatic Stress, 14*, 2001.

Norris, F., Smith, T., & Kaniasty, K. (1999). Revisiting the experience-behavior hypothesis: The effects of Hurricane Hugo on hazard preparedness and other self-protective acts. *Basic and Applied Social Psychology, 21*, 37–47.

North, C., Nixon, S., Shariat, S., Mallonee, S., McMillan, J., Spitznagel, E., & Smith, E. (1999). Psychiatric disorders among survivors of the Oklahoma City bombing. *Journal of the American Medical Association, 282*, 755–762.

Palinkas, L., Russell, J., Downs, M., & Peterson, J. (1992). Ethnic differences in stress, coping, and depressive symptoms after the Exxon Valdez Oil Spill. *The Journal of Nervous and Mental Disease, 180*, 287–295.

Perilla, J., Norris, F., & Lavizzo, E. (2002). Identifying and explaining ethnic differences in PTSD six months after Hurricane Andrew. *Journal of Social and Clinical Psychology, 21*, 28–45.

Phifer, J., & Norris, F. (1989). Psychological symptoms in older adults following natural disaster: Nature, timing, duration, and course. *Journal of Gerontology, 44*, 207–217.

Quarantelli, E. (1985). Social support systems: Some behavioral patterns in the context of mass evacuation activities. In B. Sowder (Ed.), *Disasters and mental health: Selected contemporary perspectives* (pp. 122–136). Rockville, MD: National Institute of Mental Health.

Quarantelli, E. (1994). *Future disaster trends and policy implications for developing countries.* Newark, DE: Disaster Research Center.

Riad, J., Norris, F., & Ruback, B. (1999). Predicting evacuation following two major disasters: The roles of risk perceptions, social influence, and resources. *Journal of Applied Social Psychology, 29*, 918–934.

Rochford, B. & Blocker, T. (1991). Coping with "natural" hazards as stressors. *Environment and Behavior, 23*, 171–194.

Seroka, C.M., Knapp, C., Knight, S., Siemon, C.R., & Starbuck, S. (1986). A comprehensive program for postdisaster counseling. *Social Casework: The Journal of Contemporary Social Work, 67*, 37–45.

Shannon, M., Lonigan, C., Finch, A., & Taylor, C. (1994). Children exposed to disaster: I. Epidemiology of post-traumatic symptoms and symptom profiles. *Journal of American Academy of Child and Adolescent Psychiatry, 33*, 80–93.

Shore, J., Tatum, E., & Vollmer, W. (1986). Evaluation of mental effects of disaster, Mount St. Helens Eruption. *American Journal of Public Health, 76*, 76–83.

Smith, E., Robins, L., Przybeck, T., Goldring, E., & Solomon, S. (1986). Psychosocial consequences of a disaster. In J. Shore (Ed.), *Disaster stress studies: New methods and findings* (pp. 49–76). Washington, DC: American Psychiatric Press.

Solomon, S.D., Bravo, M., Rubio-Stipec, M., & Canino, G. (1993). Effect of family role on response to disaster. *Journal of Traumatic Stress, 6*, 255–269.

Steinglass, P., & Gerrity, E. (1990). Natural disasters and post-traumatic stress disorder: Short-term versus long-term recovery in two disaster affected communities. *Journal of Applied Social Psychology, 20*, 1746–1765.

Substance Abuse and Mental Health Services Administration (1994). *Disaster response and recovery: A handbook for mental health professionals*. Washington, D.C.: U.S. Department of Health and Human Services.

Thompson, M., Norris, F., & Hanacek, B. (1993). Age differences in the psychological consequences of Hurricane Hugo. *Psychology and Aging, 8*, 606–616.

United Nations General Assembly Economic and Social Council (2000). *Strengthening of the coordination of emergency humanitarian assistance of the United Nations*. New York: Authors.

Ursano, R., & McCarroll, J. (1994). Exposure to traumatic death: The nature of the stressor. In R. Ursano, B. McCaughey, & C. Fullerton (Eds.), *Individual and community responses to trauma and disaster: The structure of human chaos* (pp. 46–71). Cambridge: Cambridge University Press.

Van Den Eynde, J., & Veno, A. (1999). Coping with disastrous events: An empowerment model of community healing. In R. Gist & B. Lubin (Eds.), *Response to disaster: Psychological, community, and ecological approaches* (pp. 167–192). Philadelphia, PA: Taylor & Francis.

Weisaeth, L. (1994). Psychological and psychiatric aspects of technological disasters. In R. Ursano, B. McCaughey, & C. Fullerton (Eds.), *Individual and community responses to trauma and disaster: The structure of human chaos* (pp. 72–102). Cambridge: Cambridge University Press.

Wierzbicka, A. (1994). Emotion, language, and cultural scripts. In S. Kitayama & H. Markus (Eds.), *Emotion and culture: Empirical studies of mutual influence* (pp. 133–196). Washington, D.C.: American Psychological Association.